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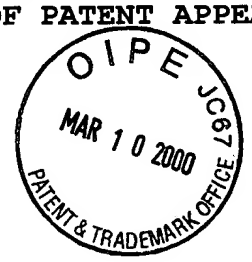
IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES



In re Application of

Fumio ABE et al.

Serial No.: 08/857,585

Filed: May 16, 1997

For: HEATER AND CATALYTIC CONVERTER

On Appeal from:
Group Art Unit: 1764

Examiner: Nadine Preisch

BRIEF ON APPEAL

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I. REAL PARTY IN INTEREST

The real party in interest is NGK Insulators, Ltd. whose ownership interest is set forth in an Assignment recorded November 9, 1995 at Reel 7688, Frame 860.

II. RELATED APPEALS AND INTERFERENCES

There are no appeals or interferences that would directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

III. STATUS OF CLAIMS

There were eight claims originally filed in grandparent application Serial No. 08/067,275, filed May 26, 1993. During the course of prosecution of a series of cases including that case, parent application Serial No. 08/530,537, filed September 20, 1995, and the instant application, the claims that were before the Examiner for consideration were claims 3, 5, 6, 12, and 14; claims 3, 5, and 6 had been amended prior to the filing of the instant application; claims 12 and 14 were claims added during the course of prosecution of the parent case.

In a Preliminary Amendment filed February 10, 1999 in the application on appeal, claim 3 was amended for a fourth time; in

an Amendment Under 37 CFR 1.111 filed June 22, 1999, claim 3 was amended for a fifth time. A Request for Reconsideration was filed in reply to the Final Rejection. The claims as finally rejected thus read as in the Appendix to this Brief on Appeal; those claims are claims 3, 5, 6, 12, and 14.

IV. STATUS OF AMENDMENTS

A Request for Reconsideration was filed to the Final Rejection. No amendment was filed after the Final Rejection; all amendments have been entered.

V. SUMMARY OF THE INVENTION

The invention set out in the claims on appeal is directed to an adsorbent structure having (1) a honeycomb structure including a periphery and two ends, including a plurality of passages defined by partition walls and extending in an axial direction between the ends and (2) a composition including (a) high silica zeolite having a Si/Al atomic ratio of not less than 40 and an alkali metal content of 0.1% by weight or less and (b) a heat-resistant oxide other than zeolite wherein the heat-resistant oxide is loaded with a noble metal; the composition is coated on

the partition walls of the honeycomb structure. The Board is directed to at least the following portions of the specification where the claimed invention is discussed or described: page 1, lines 4 to 8; page 4, lines 10 to 19; page 5, lines 1 to 12; page 5, line 26 to page 6, line 11; page 6, lines 16 and 17; page 9, line 6 to page 12, line 24; and page 13, line 21 to page 32, line 11.

The adsorbent structure of the present structure is particularly effective in the treatment of exhaust gases; see, e.g., page 5, lines 1 to 6, and the tables at pages 22, 26, and 31.

VI. ISSUES

There are two main issues in this case, namely (1) whether the subject matter of claims 3, 5, 6, 12, and 14 patentably defines in the sense of 35 USC 103 over Japanese printed patent publication 2-56247 (the Examiner refers to the reference as "Hei 2-56247"; appellants will use the expression "Hei '247" hereafter) in view of Eberly, Jr. et al. '488 (3,591,488) and (2) whether the subject matter of claims 3, 5, 6, 12, and 14

patentably defines in the sense of 35 USC over Hei '247 in view of Inoue et al. '236 (5,223,236).

There are also two subissues that will become apparent during assessment of the ARGUMENT infra. Those subissues are whether the claims positively recite a result-effective variable and whether the working examples are adequate proof of the patentability of the claimed subject matter.

VII. GROUPING OF CLAIMS

Claims 3, 5, 6, 12, and 14 stand as a unit.

VIII. ARGUMENT

Hei '247 is asserted to show all of the claimed features but for a specified Si/Al atomic ratio of not less than 40. The secondary reference in each rejection is cited to show zeolites having such an atomic ratio. The Examiner asserts that it would have been obvious to use the zeolite disclosed in each of the secondary references in the system of the primary reference. Appellants develop in detail below why the Examiner's position is an erroneous one.

A. CLAIM 3 RECITES A RESULT-EFFECTIVE CHARACTERISTIC THAT IS NOT RECOGNIZED IN THE PRIOR ART

Claim 3 recites that the zeolite has an alkali metal content of 0.1% by weight or less. This feature is supported in the specification at page 21, lines 24 to 26 and Table 1 at page 22. This aspect of the invention will be discussed in more detail in D. infra.

B. DEFICIENCIES OF THE PRIMARY REFERENCE

In addition to lacking disclosure with respect to a high silica/alumina ratio zeolite, the primary reference also lacks any awareness of the need to control the alkali metal content of that zeolite. Moreover, the primary reference device is structured such that the zeolite layer is required to be an inner layer. The primary reference also has no description of thermal stability and the influence of water on the zeolite's hydrocarbon adsorption capacity.

C. EBERLY, JR. ET AL. '488 DESCRIBES A ZEOLITE USEFUL IN A TECHNIQUE OTHER THAN AUTOMOBILE EXHAUST GAS TREATMENT

Eberly, Jr. et al. '488 was cited for the proposition that it is known to use zeolites having high Si/Al ratios to display increased thermal stability. See column 2, lines 41 to 45 and column 5, lines 2 to 5 of the reference. The patent describes a necessary range of silica/alumina mole ratio (not an Si/Al atomic ratio) for using a catalyst in the field of oil reforming; the reference does not disclose use of such material in the different and unique field of automobile exhaust gas treatment. In the latter field, one needs to take into consideration not just heat resistance characteristics but other characteristics having a significant impact on the system, such as hydrophobic characteristics. The Board's attention is directed to page 9, lines 16 to 20 of the specification stating that a Si/Al ratio less than 40 gives a zeolite with "insufficient heat resistance and increased hydrophilicity. As a result, it shows high adsorbability for the water contained in exhaust gas, which is not preferable."

During the course of oil reforming, it is not necessarily required to take hydrophobic characteristics into consideration.

Therefore, in selecting the most suitable range of a Si/Al atomic ratio for automobile exhaust gas treatments, both heat resistance characteristics and hydrophobic characteristics must be chosen carefully because they are not relatively insignificant factors as they are in the case when using a catalyst for oil reforming. Accordingly, the person of ordinary skill in the art would not look to the Eberly, Jr. et al. '488 for any teaching or suggestion of what Si/Al atomic ratio is effective in the purification of automobile exhaust gas. The secondary reference is restricted to hydrocarbon conversions; see, for example, column 5, lines 17 to 25 and 43 to 45 and claims 1 to 14 thereof. The disclosure at column 2, lines 39 to 44 about "general catalysts or adsorptive uses" concerns only heat stability. Much more has to be taken into consideration when assessing effectiveness in automobile exhaust gas purification operations.

The invention on appeal relates to a structure that is used for automobile exhaust gas cleaning. Automobile exhaust gas contains a mixture of various components including hydrocarbons, CO, O_2, CO_2, N_2, H_2O, and the like with the composition of the mixture always undergoing change. The quantity of hydrocarbon normally present in automobile exhaust gas is very low. Thus one

would not look to disclosure in the oil reforming art involving massive quantities of hydrocarbons for what may provide good results in cleaning automobile exhaust gases.

The general disclosure in Eberly, Jr. et al. '488 at column 2, lines 39 to 42 indicating that higher ratios are preferred due to higher stability in "general catalytic or absorptive uses" would not be regarded by a person of ordinary skill in the art in the exhaust gas purification field to apply with equal force thereto because the conditions for operation between the field discussed in the reference and exhaust gas purification are completely different. The comments in the secondary reference relate to the petrochemical field where zeolite has conventionally been used and there was no investigation therein with respect to requirements of a system to be used for automobile exhaust gas purification, e.g., durability.

Moreover, petrochemical operations such as reforming are carried out under stable controlled conditions. One need not be concerned with unavoidable, sudden, but always expected fluctuations in operating conditions. In contrast, during automotive exhaust gas treatment, one always encounters and has to take into consideration a variety of changeable conditions

including road conditions, weather conditions, the manner of driving, the driver's ability, and the like.

Furthermore, exhaust gas flows in zeolite under conditions where the reaction substrate is very thin and it is frequently subjected to rapid temperature changes or SV changes. There are all types of heat-resistance but when considering absorbency for automobile exhaust gas purifications it is important that the adsorbent have a high specific surface area (a high pore capacity) to take in more hydrocarbon molecules.

With so many matters that need to be considered, it is impossible to judge whether an adsorbent said to be useful in the petrochemical field would be suitable as an adsorbent for exhaust gas from automobiles.

Appellants reiterate that automobile exhaust gas contains a mixture of many components such as hydrocarbons, carbon monoxide, oxygen, carbon dioxide, nitrogen, water and the like; this compositional mix is always subject to change and, as mentioned above, the types of hydrocarbon in the mixture also vary in size, shape and the like.

During exhaust gas purification operations, there is always competitive adhesion between hydrocarbon and vapor, which is

present in a much greater quantity than the hydrocarbon itself which is adsorbed.

Because the hydrocarbon itself is present in small amounts in automobile exhaust gas, zeolite has little chance to contact substantially with the hydrocarbon molecules.

While a person of ordinary skill in the art may be aware of the general characteristics of zeolite, one cannot know, until one is cognizant of required heat resistance and hydrophobicity variations depending upon intended use conditions, which zeolite to employ in a particular circumstance. The nature of the process drives the catalyst; the use of a catalyst in one method does not justify a conclusion that the catalyst could or should be used in another method.

D. THE RESULT-EFFECTIVE VARIABLE IN APPELLANTS' CLAIMS

A high Si/Al ratio does not alone guarantee suitability as a hydrocarbon adsorbent. Appellants point out that the retention of a high BET, that is, a specific surface area at a high temperature is also influenced by the alkali metal content of the zeolite. The Board's attention is directed to the instant specification at page 21, lines 24 to 26 and Table 1 at page 22.

Appellants acknowledge that Eberly, Jr. et al. '488 describes an alkali metal content in the zeolite at column 5, lines 34 to 37. The reference, however, contains no description regarding the relationship among BET, the Si/Al ratio, and the alkali metal content. The reference does not teach the essential need to have a minimum Si/Al ratio in combination with a specific alkali content to retain BET at temperatures such as 1,000°C. Nor does the reference suggest such a relationship.

The use of a zeolite having merely a high Si/Al ratio does not guarantee retention of a high BET at a high temperature; in this regard, the Board is asked to compare the results of zeolite A with the results of zeolite G in Table 1 at page 22. Zeolite A has a Si/Al ratio of 14 (less than 40) and zeolite G has a Si/Al ratio of 200 (greater than 40); the BET values for both are unsatisfactory. The Board is also directed to the results for zeolites B to F and is asked to compare them with the zeolite G results. An assessment of the results for all of those zeolites listed in the table shows the need to have both the Si/Al ratio and the alkali metal content features in the zeolite called for in the claims.

E. THE CLAIMS ALSO PATENTABLY DEFINE OVER THE COMBINATION OF HEI '247 AND INOUE ET AL. '236

The primary reference has been relied upon for the same reasons as in the rejection discussed above. The secondary reference in this rejection is said to show using a high silica zeolite with a Si/Al ratio of greater than 20 for exhaust gas conversion. The Examiner again concludes that the claimed subject matter would have been obvious to the person of ordinary skill in the art from a joint consideration of these references. Appellants respectfully submit that this rejection is in error for the same reasons given when discussing the rejection using Eberly, Jr. et al. '488 as the secondary reference. Inoue et al. '236 does not teach or suggest the need to control both the Si/Al ratio and the alkali metal content in the zeolite to give effective results for appellants' intended use. The claims patentably distinguish over this combination of references for the reasons given above, i.e., the specification establishes the necessity to have controls on both the Si/Al ratio and in the alkali metal content in the zeolite. Inoue et al. '236 provides no rationale to do so. The rejection should be reversed.

F. THE ALKALI METAL CONTENT FEATURE IS A POSITIVE FEATURE AND NEEDS TO BE TAKEN INTO CONSIDERATION WHEN ASSESSING PATENTABILITY HERE

Appellants acknowledge the comment at page 3, lines 7 to 9 of the Final Rejection that Hei '247 "is considered to encompass applicants' alkali metal content of 0.1% by weight or less because 'less' is considered to encompass 0%." Appellants also acknowledge the remark in the Advisory Action that the primary reference "does not need to provide a reason for controlling the alkali metal content when it is considered to encompass applicants' claimed range." These statements, however, provide no reason for alkali metal content control. Appellants have explained and showed above why the alkali metal content of the zeolite used in the claimed adsorbent structure needs to be controlled.

Appellants agree with the Examiner that the primary reference teaches a possible inclusion of an alkali metal in zeolite. The reference merely describes a very generic general formula of zeolite; see the fourth paragraph at page 5 of the English translation of Hei '247. The depicted general formula shows that sodium or potassium may be present in the zeolite. Appellants believe that such a general description makes it quite

difficult, even for people of skill in the art, to draw any conclusion(s) with respect to whether the zeolite described therein should have a restricted alkali content. On the contrary, one may say that the normal alkali content in zeolite is greater than 0.1%; see for example, column 2, lines 19 to 29 of Eberly, Jr., et al. '488 (see especially the formula) and Example 1 of Inoue et al. '236. The Board is directed to the formula at column 4, lines 49 in Inoue et al. '236.

Appellants further note that the influence of water on the adsorption can be eliminated or minimized by using a zeolite having a specific Si/Al ratio; see Table 1 and the remarks at page 22, line 16 to page 23, line 7 of the application. Control of the Si/Al ratio also has an effect on BET for the thermal resistance.

The claims on appeal contain all necessary elements or features in support of appellants' case for patentability. The Si/Al ratio and the alkali metal content are specified. With these values, one achieves the BET and influence on water properties already discussed; those properties follow from using a high silica zeolite having the Si/Al ratio and alkali metal content values set out in the claims.

G. THE NODA DECLARATION FURTHER SUPPORTS PATENTABILITY OF THE CLAIMED INVENTION

Appellants filed with the Request for Reconsideration a Declaration by Ms. Naomi Noda reporting the BET values for a zeolite having an Si/Al ratio of 25, i.e., below the ratio specified in the instant claims. A review of the Table at page 2 of that paper shows that the zeolite lacks sufficient thermal stability.

This Declaration taken with the results depicted in the Table at page 22 of the specification and discussed above establishes the patentability of the claims on appeal.

IX. CONCLUSION

For all of the foregoing reasons, appellants respectfully submit that claims 3, 5, 6, 12, and 14 patentably define over the

cited references and a ruling from the Board so indicating is earnestly solicited.

Respectfully submitted,

PARKHURST & WENDEL, L.L.P.

March 10, 2000
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APPENDIX A

3. An adsorbent structure comprising:

a honeycomb structure having a periphery and two ends, including a plurality of passages that are defined by partition walls and extend in an axial direction between the ends; and

a composition including (a) high-silica zeolite having a Si/Al atomic ratio of not less than 40 and an alkali metal content of 0.1% by weight or less and (b) a heat-resistant oxide other than zeolite, wherein said heat-resistant oxide is loaded with a noble metal, and said composition is coated on the partition walls.

5. The adsorbent structure of claim 3, wherein the zeolite and the heat-resistant oxide loaded with a noble metal form a mixture.

6. The adsorbent structure of claim 5, wherein the zeolite is loaded with a noble metal.

12. The adsorbent structure of claim 3, wherein said zeolite is loaded with a noble metal.

14. The adsorbent structure of claim 3, wherein said heat resistant oxide comprises a material selected from the group consisting of Al_2O_3, TiO_2, ZrO_2 or SiO_2.

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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 53

Application Number: 08/857,585
Filing Date: 05/16/97
Appellant(s): Abe et al.

Charles A. Wendel
For Appellant

EXAMINER'S ANSWER

This is in response to appellants' brief on appeal filed 3-10-00.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

No amendment after final has been filed.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

The appellants' statement of the issues in the brief is correct.

(7) Grouping of Claims

Appellants' brief includes a statement that claims 3, 5, 6, 12 and 14 stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

The following is a listing of the prior art of record relied upon in the rejection of claims under appeal.

Hei 2-56247	KAWABATA ET AL.	2-1990
3,591,488	EBERLY, JR. ET AL.	7-1971
5,223,236	INOUE ET AL.	6-1993

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claims 3, 5, 6, 12 and 14 stand rejected under 35 U.S.C. 103(a) as being unpatentable over the translation of Hei 2-56247 in view of Eberly, Jr. et al.(3,591,488).

In the pending application, appellants claim a composition comprising a high silica zeolite having a Si/Al ratio of not less than 40, and a heat resistant oxide, wherein the heat resistant oxide is loaded with a noble metal. Appellants further claim an adsorbent comprising a honeycomb structure coated with a heat resistant oxide loaded with a noble metal.

The translation of Hei 2-56247 teaches a composition for automobile exhaust gas treatment comprising a zeolite and a heat resistant oxide in the form of alumina. The Hei 2-56247 translation also discloses that a noble metal in the form of Pt is loaded on alumina. For example, see page 3, lines 7-13. The translation of Hei 2-56247 also discloses that the support is honeycomb shaped. In addition, the support is coated with a heat resistant oxide in the form of alumina. For example, see page 3, lines 6-7.

The translation succeeds in teaching appellants' claimed zeolite component and heat resistant oxide component, other than zeolite, loaded with a noble metal in the form of alumina loaded with Pt. Furthermore, Hei 2-56247 also succeeds in teaching appellants' honeycomb

shaped support. In addition, the translation of Hei 2-56247 is considered to encompass appellants' alkali metal content of 0.1% by weight or less because "less" is considered to encompass 0%.

Several differences are noted between the applied art of the Hei 2-56247 translation and appellants' claimed invention. The Hei 2-56247 translation is silent about the Si/Al ratio in the zeolite. Furthermore, the Hei 2-56247 translation is silent about the specific structure of the honeycomb.

The reference of Eberly, Jr. et al.(3,591,488) is cited for the general teaching that it is known in the art that zeolites with that high silica/alumina ratios, such as 50, are desirable for high temperature conversions because they display increased thermal stability. For example, see column 2, lines 41-45 and column 5, lines 2-5.

Since it is desirable for compositions to be thermally stable for exhaust gas treatment process due to the high temperatures involved, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select a zeolite with a high silica/alumina ratio in the exhaust gas composition disclosed by the translation of Hei 2-56247 because it is known in the art that zeolites with a high silica/alumina ratio display increased thermal stability.

Furthermore, appellants' limitations directed at the specific shape of the honeycomb composition are not considered to be patentable distinctions because such shapes are conventional in the art.

Claims 3, 5, 6, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over the translation of Hei 2-56247 in view of Inoue et al.(5,223,236).

In the pending application, appellants claim a composition comprising a high silica zeolite having a Si/Al ratio of not less than 40, and a heat resistant oxide, wherein the heat resistant oxide is loaded with a noble metal. Appellants further claim an adsorbent comprising a honeycomb structure coated with a heat resistant oxide loaded with a noble metal.

The translation of Hei 2-56247 teaches a composition for automobile exhaust gas treatment comprising a zeolite and a heat resistant oxide in the form of alumina. The abstract also discloses that a noble metal in the form of Pt is loaded on alumina. For example, see page 3, lines 7-13. The translation of Hei 2-56247 also discloses that the support is honeycomb shaped. In addition, the support is coated with a heat resistant oxide in the form of alumina. For example, see page 3, lines 6-7.

The translation of Hei 2-56247 succeeds in teaching appellants' claimed zeolite component and heat resistant oxide component, other than zeolite, loaded with a noble metal in the form of alumina loaded with Pt. Furthermore, translation of Hei 2-56247 also succeeds in teaching appellants' honeycomb shaped support.

Several differences are noted between the applied art of the Hei 2-56247 translation and appellants' claimed invention. The Hei 2-56247 translation is silent about the Si/Al ratio in the zeolite. Furthermore, the translation of Hei 2-56247 is silent about the specific structure of the honeycomb.

The reference of Inoue et al.(5,223,236) teaches the use of a high silica zeolite with a silica/alumina ratio greater than 20 for exhaust gas conversion. See column 1, lines 53-56 and column 2, lines 7-10.

Since the translation of Hei 2-56247 does not limit the silica/alumina ratio of the zeolite, it would have been obvious to one of ordinary skill in the art at the time the invention was made to select any silica/alumina ratio greater than 20 (e.g. a ratio of 40) because the reference of Inoue et al.(5,223,236) teaches that any silica/alumina ratio greater than 20 is desirable for exhaust gas treatment. Appellants have not shown anything unexpected with respect to the claimed silica/alumina ratio.

Furthermore, appellants' limitations directed at the specific shape of the honeycomb composition are not considered to be patentable distinctions because such shapes are conventional in the art.

(11) Response to Argument

Appellants argue 1) the reference of Hei 2-56247 lacks any awareness of the need to control the alkali metal content of the zeolite; 2) the Hei 2-56247 composition is structured such that the zeolite layer is required to be on the inside; 3) Hei 2-56247 does not disclose the influence of water on the zeolite's hydrocarbon adsorption capacity; 4) the secondary reference of Eberly, Jr. et al.(3,591,488) discloses a zeolite with the necessary silica/alumina ratio for use in petroleum processing (hydrocarbon conversions) and not exhaust gas conversion as disclosed

in the primary reference of Hei 2-56247; 5) the reference of Eberly, Jr. et al.(3,591,488) does not describe the relationship between BET, Si/Al ratio and alkali metal content; 6) the reference of Inoue et al.(5,223,236) does not teach or suggest the need to control both the Si/Al ratio and the alkali metal content to give effective results for appellants' intended use; and 7) the Declaration by Ms. Naomi Noda reports BET values for a zeolite having a Si/Al ratio of 25, below the ratio defined in the claims.

In response to appellants' argument 1), the primary reference of Hei 2-56247 is not required to teach the "reason" for controlling the alkali metal content. The translation of Hei 2-56247 is considered to encompass appellants' alkali metal content of 0.1% by weight or less because "less" is considered to encompass 0%. As a result, appellants' arguments with respect to controlling the alkali metal content do not overcome the pending rejection.

Appellants' arguments 2) and 3) are not successful in overcoming the pending rejections because appellants are arguing limitations which are not in the claims. Since the claims do not contain limitations directed at the placement of the zeolite layer or the influence of water on the zeolite's hydrocarbon adsorption capacity, arguments directed at such do not succeed in establishing differences between the reference and the pending claims.

In response to appellants' argument 4), the secondary reference of Eberly, Jr. et al.(3,591,488) is considered to suggest the use of a Si/Al ratio of at least 40 in a catalyst or adsorbent used in a high temperature conversion such as exhaust gas conversion. Motivation for combining references results from the fact that the reference of Eberly, Jr. et al.(3,591,488)

specifically discloses that "It has been found that for general catalytic or absorptive uses, the aluminosilicates having higher silica to alumina ratios will be preferred due to their higher stability....". For example, see column 2, lined 39-44. Since the composition of Hei 2-56247 is used for the "catalytic/absorptive" purpose of treating exhaust gas, one of ordinary skill would have been motivated to select a high silica zeolite such as that claimed by applicants. In addition, the reference of Eberly, Jr. et al. does not limit the processes the high silica zeolite is used in. Since the reference broadly discloses that the high silica zeolite is useful in various hydrocarbon conversion processes without limiting its function, it is also considered to be useful in exhaust gas conversion, which is considered to be a type of hydrocarbon conversion despite appellants' assertion. Appellants have not pointed to any teaching in the reference of Eberly, Jr. et al., that indicates that the high silica zeolite "can not" be used in an exhaust gas conversion.

In response to appellants' argument 5), the reference of Eberly, Jr. et al.(3,591,488) is not required to disclose the relationship between BET, Si/Al ratio and alkali metal content. BET is not defined in the claims. As a result, it is not mandatory that a reference teaches the significance of BET. In addition, the primary reference is considered to suggest 0% alkali metal which is in purview of appellants' less than 0.1%. Since the primary reference already suggests appellants' alkali metal content, it is not mandatory that the secondary reference of Eberly, Jr. et al.(3,591,488) teach the claimed alkali metal content. The secondary reference of Eberly, Jr. et al.(3,591,488) was relied on to teach the deficiency of the primary reference with respect to the Si/Al ratio. Since the reference provides motivation for selecting a Si/Al within appellants'

claimed range, it is considered to properly remedy the deficiency of the primary reference with respect to a desired Si/Al ratio.

In response to appellants' argument 6), the reference of Inoue et al.(5,223,236) is not required to teach the control of both the Si/Al ratio and the alkali metal content to give effective results for appellants' intended use. The primary reference suggests an alkali metal content of 0% which is in purview of appellants' less than 0.1 %. As a result, it is not mandatory for the secondary reference of Inoue et al.(5,223,236) to address the alkali metal content because it is not a deficiency of the primary reference. The reference of Inoue et al.(5,223,236) was relied on to teach the deficiency of the primary reference with respect to the Si/Al ratio. Inoue et al.(5,223,236) is considered to be a proper reference to combine with Hei 2-56247 because it provides motivation for selecting a high Si/Al ratio in the exhaust gas catalysts of Hei 2-56247.

In response to appellants' argument 7), the Declaration by Ms. Naomi does not overcome the pending rejections with rejections because the rejections contain a motivation to select an Si/Al ratio greater than 40. Furthermore, appellants refer to a BET characteristic which is not contained in the claims. Since it is not contained in the claims, it is not considered to be critical to the composition.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

N.P.
July 12, 2003

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